Commonwealth of Kentucky
Division for Air Quality

PERMIT STATEMENT OF BASIS

Draft
Title V, Construction / Operating
Permit: V-07-045, Renewal
Trace Die Cast, Inc.

December 7, 2007
Vahid Bakhtiar, Reviewer

SOURCE ID:	21-227-00085
AGENCY INTEREST:	4142
ACTIVITY:	APE20070001

SOURCE DESCRIPTION:

Trace Die Cast, Inc. melts aluminum ingots before casting them into aluminum parts. Clean aluminum ingots are preheated in a 0.35-mmbtu/hour, natural gas-fired pre-heater before charging them into 6 reverberatory melt furnaces, emission points 101(CF1)-106(CF6). The furnaces are natural gas–fired and have a total melting rate of 13 tons/hour of aluminum ingots. Both emission points 101(CF1) and 102(CF2) have a maximum continuous rating of 8.0 mmbtu/hour each while emission point 103(CF3) is 6.0 mmbtu/hour and 104(CF4), 105(CF5) and 106(CF6) are 10.0 mmbtu/hour. The molten aluminum is fluxed with chloride and fluoride based flux salts. Aluminum dross that is formed is sent off site for metal recovery. The melted and fluxed aluminum is then transferred to 38 holding furnaces, emission points 201(HF1)-216(HF16), 221(HF21)-225(HF25), 230(HF30)-236(HF36), 241(HF41)-245(HF45), and 251(HF51)-255(HF55) where it is fluxed again using chloride and fluoride based flux salts. The holding furnaces have a maximum holding rate of about 17 tons/hour. Each holding furnace, except for 230(HF30)-233(HF33), has a maximum continuous rating of 0.25 mmbtu/hour. Emission points 230(HF30)-233(HF33) each has a rating of 0.33 mmbtu/hour. Subsequently, the molten aluminum from the holding furnaces is cast into aluminum parts in 38 corresponding die cast machines, emission points 301(DCM1)-316(DCM16), 321(DCM21)-325(DCM25), 330(DCM30)-336(DCM36), 241(DCM41)-245(DCM45), and 251(DCM51)-255(DCM55). Five different casting lubricants, grease, and oil are used in the die cast machines along with water. The aluminum castings are then trimmed by a hydraulic press before they are polished by steel shots in 3 shot blast machines, emission points 501(SB1)-504(SB4), which have a total rate of 6.75 tons/hour of aluminum castings. The effluent water from the die cast machines are evaporated in 6 evaporators, emission points 401(Evap1)-406(Evap6), to separate the oils from the water. The trimmed and shot blasted aluminum scrap is collected and sent back to the melt furnaces to be re-melted. Spent steel shots are collected and disposed of in landfill.

PERMIT RENEWAL V-07-045:

Trace Die Cast, Inc. is currently operating under Title V Permit No. V-06-006 Revision 1. Trace Die Cast's application for renewal of the operating permit was received on March 7, 2007.
Due to economic conditions Trace Die Cast delayed the purchase of a number of equipment that was already in Permit No. V-06-006 Revision1. Some of that equipment that was delayed has now been cancelled and some will be purchased to meet their production requirements. This will require Trace

Die Cast to remove some older equipment and replace them with new ones.
The following emission points, equipment, have been removed from the current permit:

103(CF3), 107(CF7), 201(HF1), 202(HF2), 204(HF4), 205(HF5)-207(HF7), 265(HF65), 271(HF71)-275(HF75), 301(DCM1), 302(DCM2), 304(DCM4), 305(DCM5)-307(DCM7), 365(DCM65), 371(DCM71)-375(DCM75), 401(Evap1), 402(Evap2), and 501(SB1)-503(SB3).

Regulation 401 KAR 59:095- New oil-effluent water separator for evaporators was also removed from the current Title V permit. This regulation has been in the original title V permit and based on the information the division has received and the discussions with Trace Die Cast, this process is not subject to Regulation 59:095 and this regulation does not apply to the evaporators.

Regulation 401 KAR 63:020- Potentially hazardous matter or toxic substances, was added to the permit. This regulation is applicable to emissions of hazardous air pollutants (HAPs) from each emission point, specifically, chromium, lead, manganese, nickel, HCl, and HF.

Administrative Corrections:
Trace Die Cast is going to relocate some equipment to make room for their new equipment that will be installed later in 2008, and as a result some of the descriptions of the Holding Furnaces, Die Cast Machines, and Evaporators have been changed in renewal permit. As a result of these changes some of the construction dates have also been changed. The new and previous descriptions and the related construction dates of these emission points are listed below:

Emission Points in the Current Permit No. V-06-006 Revision1	New Identification for Emission Points in Renewal Permit No. V-07-045	Construction Commenced in Renewal Permit No. V-07-045
203 (HF3) Holding Furnace 3	203 HF 6042	September 1, 2005
215 (HF15) Holding Furnace 15	215 HF 6052	January 1, 2007
208 (HF8) Holding Furnace 8	208 HF 5053	September 1, 2006
212 (HF12) Holding Furnace 12	212 HF 6033	June 1, 2007
213 (HF13) Holding Furnace 13	213 HF 6034	
214 (HF14) Holding Furnace 14	214 HF 6035	
209 (HF9) Holding Furnace 9	209 HF 5009	February 1, 1996
210 (HF10) Holding Furnace 10	210 HF 2510	March 1, 1995
211 (HF11) Holding Furnace 11	311 HF 5011	November 1, 1992
216 (HF16) Holding Furnace 16	316 HF 2516	December 1, 1994
221 (HF21) Holding Furnace 21	221 HF 5021	February 1, 1999
222 (HF22) Holding Furnace 22	222 HF 5022	
223 (HF23) Holding Furnace 23	223 HF 5023	
224 (HF24) Holding Furnace 24	224 HF 5024	
225 (HF25) Holding Furnace 25	225 HF 5025	
234 (HF34) Holding Furnace 34	234 HF 5001	February 22, 2002
235 (HF35) Holding Furnace 35	235 HF 5002	February 1, 2003
236 (HF36) Holding Furnace 36	236 HF 5003	September 1, 2005
231 (HF31) Holding Furnace 31	231 HF 5004	June 30, 1999
232 (HF32) Holding Furnace 32	232 HF 2506	October 10, 2003
233 (HF33) Holding Furnace 33	233 HF 5007	September 1, 2003
241 (HF41) Holding Furnace 41	241 HF 2508	December 1, 2005
242 (HF42) Holding Furnace 42	242 HF 2515	November 1, 1993
243 (HF43) Holding Furnace 43	243 HF 5043	December 1, 2002
244 (HF44) Holding Furnace 44	244 HF 5044	June 10, 2000
245 (HF45) Holding Furnace 45	245 HF 5045	January 1, 2003
251 (HF51) Holding Furnace 51	251 HF 5012	June 1, 2007
252 (HF52) Holding Furnace 52	252 HF 5014	May 5, 2000
253 (HF53) Holding Furnace 53	253 HF 5015	January 1, 1999
254 (HF54) Holding Furnace 54	254 HF 5054	June 1, 2006
255 (HF55) Holding Furnace 55	255 HF 5055	April 1, 2006

261 (HF61) Holding Furnace 61	261 HF 6031	October 1, 2003
262 (HF62) Holding Furnace 62	262 HF 6032	
263 (HF63) Holding Furnace 63	263 HF 6041	April 15, 2005
264 (HF64) Holding Furnace 64	264 HF 6051	January 1, 2007
303 (DCM3) Die Cast Machine 3	303 DCM 42-10394214	September 1, 2005
315 (DCM15) Die Cast Machine 15	315 DCM 52-10417042	January 1, 2007
308 (DCM8) Die Cast Machine 8	308 DCM 53-10415641	September 1, 2006
312 (DCM12) Die Cast Machine 12	312 DCM 33-10438959	June 1, 2007
313 (DCM13) Die Cast Machine 13	313 DCM 34-10438961	
314 (DCM14) Die Cast Machine 14	314 DCM 35-10438960	
309 (DCM9) Die Cast Machine 9	309 DCM 9-95177	February 1, 1996
310 (DCM10) Die Cast Machine 10	310 DCM 10-94458	March 1, 1995
311 (DCM11) Die Cast Machine 11	311 DCM 11-97192	November 1, 1992
316 (DCM16) Die Cast Machine 16	316 DCM 16-94366	December 1, 1994
321 (DCM21) Die Cast Machine 21	321 DCM 21-10314131	February 1, 1999
322 (DCM22) Die Cast Machine 22	322 DCM 22-10314130	
323 (DCM23) Die Cast Machine 23	323 DCM 23-10306673	
324 (DCM24) Die Cast Machine 24	324 DCM 24-10306672	
325 (DCM25) Die Cast Machine 25	325 DCM 25-10306671	
334 (DCM34) Die Cast Machine 34	334 DCM 1-10335843	February 22, 2002
335 (DCM35) Die Cast Machine 35	335 DCM 2-10346449	February 1, 2003
336 (DCM36) Die Cast Machine 36	336 DCM 3-10395007	September 1, 2005
331 (DCM31) Die Cast Machine 31	331 DCM 4-10306728	June 30, 1999
332 (DCM32) Die Cast Machine 32	332 DCM 6-10369022	October 10, 2003
333 (DCM33) Die Cast Machine 33	333 DCM 7-10368991	September 1, 2003
341 (DCM41) Die Cast Machine 41	341 DCM 8-10395017	December 1, 2005
342 (DCM42) Die Cast Machine 42	342 DCM 15-93268	November 1, 1993
343 (DCM43) Die Cast Machine 43	343 DCM 43-10369023	December 1, 2002
344 (DCM44) Die Cast Machine 44	344 DCM 44-10346396	June 10, 2000
345 (DCM45) Die Cast Machine 45	345 DCM 45-10346448	January 1, 2003
351 (DCM51) Die Cast Machine 51	351 DCM 12-10438758	June 1, 2007
352 (DCM52) Die Cast Machine 52	352 DCM 14-10318859	May 5, 2000
353 (DCM53) Die Cast Machine 53	353 DCM 15-10322594	January 1, 1999
354 (DCM54) Die Cast Machine 54	354 DCM 54-10412524	June 1, 2006
355 (DCM55) Die Cast Machine 55	355 DCM 55-10412524	April 1, 2006
361 (DCM61) Die Cast Machine 61	361 DCM 31-10335855	October 1, 2003
362 (DCM62) Die Cast Machine 62	362 DCM 32-10346397	
363 (DCM63) Die Cast Machine 63	363 DCM 41-10381002	April 15, 2005
364 (DCM64) Die Cast Machine 64	364 DCM 51-10419936	January 1, 2007
403 (Evap 3)Evaporator 3	403 (Evap3) Evaporator 4	May 28, 1992
404 (Evap 4)Evaporator 4	404 (Evap4) Evaporator 3	March 7, 2001
405 (Evap 5)Evaporator 5	405 (Evap5) Evaporator 2	August 1, 2002
406 (Evap 6)Evaporator 6	406 (Evap6) Evaporator 1	August 1, 2002
407 (Evap 7)Evaporator 7	407 (Evap7) Evaporator 5	January 1, 2008
408 (Evap 8)Evaporator 8	408 (Evap8) Evaporator 6	January 1, 2008

07/26/2006 Off-Permit Change:
Trace Die Cast replaced two wet dust collectors with one new cartridge dust collector for EP504 and EP505, two shot blast machines. The replaced equipment has been incorporated in to renewal Title V Permit No. V-07-045.

COMMENTS:

Emission factors are based on AP-42, the emissions inventory system, and source-provided material safety data sheets and onsite testing. A complete list of emission factors and their source is provided with the pollutants-of-concern calculations.

Regulations applicable to the melt furnaces are 401 KAR 59:010 – New process operations (applicable to particulate and visible emissions) and 401 KAR 63:020 – Potentially hazardous matter or toxic substances (applicable to emissions of HAPs, specifically, chromium, lead, manganese, nickel, HCl, and HF). The same regulations apply to the shot blast machines, which have particulate, visible, and manganese emissions.

For the holding furnaces and die cast machines, emissions are emitted as fugitives. Applicable regulation is 401 KAR 63:020, which is applicable to emissions of HAPs, specifically, chromium, lead, manganese, nickel, HCl, and HF from the holding furnaces, and diethylene glycol from the die cast machines.

The 6 evaporators are subject to 401 KAR 63:020 – Potentially hazardous matter or toxic Substances that is applicable to emissions of hazardous air pollutant (HAP) from each emission point, specifically, diethylene glycol.

Plant-wide chromium and HF emissions were modeled using ISCST3 and the resulting concentrations were lower than the standard set in 401 KAR 63:020 – Potentially hazardous matter or toxic substances.
Plant-wide HF emission was modeled using ISCST3 and the resulting impacts were lower than the standard set in 401 KAR 53:010 – Ambient air quality standards.

Since Trace Die Cast, Inc. is a manufacturer of aluminum die castings, the Secondary Aluminum MACT does not apply, pursuant to 40 CFR 63 Subpart RRR §63.1500(d).

EMISSION AND OPERATING CAPS DESCRIPTION:

The following is a summary of emission limits for emission points subject to 401 KAR 59:010:

Emission Points	Pollutants	Emission Limits (Per Emission Point)
101(CF1)	Particulate Opacity	5.52 lbs/hour 20%
102(CF2)		
104(CF4)		6.34 lbs/hour 20%
105(CF5)		7.09 lbs/hour 20%
106(CF6)		
504(SB4)		8.15 lbs/hour 20%
505(SB5)		

The operating limitation for the melt furnaces is that only clean aluminum ingots shall be melted.

PERIODIC MONITORING:

Trace Die Cast, Inc. is required by permit to monitor the types of all raw materials processed, the monthly amounts of such materials processed, and the monthly total hours of operation. Weekly qualitative visual observation of opacity is required for opacity compliance. The permit also requires the monitoring of HAPs emissions to insure the new construction does not exceed the 10 tons per year of a HAP limit required for compliance.

OPERATIONAL FLEXIBILITY:

None

RECENT CONSTRUCTIONS AND CHANGES:

In February of 2004 Trace Die Cast applied to construct additional equipment and modify existing equipment at the facility. No provisions of the permit are changed from the initial issuance. The following is a description of changes and additions.

Emission point 107 (CMF07) is a new central melt furnace rated at 10 mmbtu per hour and capable of melting 3 tons per hour of aluminum. Points 202-208 (HF2-HF8) and 212-215 (HF12-HF15) are now rated for 0.33 mmbtu/hr and capable of holding 0.625 tons per hour of aluminum. Points 261-265 (HF61-HF65) and points 271-275 (HF71-HF75) are new holding furnaces each rated for 0.33 mmbtu per hour and capable of holding 1.5 tons per hour of aluminum. Points 302-308 (DCM2-DCM8) and points 312-315 (DMC12-DCM15) are now each rated for 0.625 tons per hour. The new die cast machines, 361-365 (DCM61-DCM65 and 371-375 (DCM71-DCM75) are each rated for 1.5 tons per hour of aluminum. Two new Process Wastewater Evaporators have been added, points 407 (Evap7) and 408 (Evap8). Each has a heat input rating of 1.5 mmbtu per hour and an process rate of 130 gallons per hour. Finally a new shot blast machine has been added, point 505 (SBM5) and uses shot at the rate of 0.036 tons per hour.

Further expansion at the plant will likely require a PSD review but regulations do not require one at this time.

CREDIBLE EVIDENCE:

This permit contains provisions which require that specific test methods, monitoring or recordkeeping be used as a demonstration of compliance with permit limits. On February 24, 1997, the U.S. EPA promulgated revisions to the following federal regulations: 40 CFR Part 51, Sec. 51.212; 40 CFR Part 52, Sec. 52.12; 40 CFR Part 52, Sec. 52.30; 40 CFR Part 60, Sec. 60.11 and 40 CFR Part 61, Sec. 61.12, that allow the use of credible evidence to establish compliance with applicable requirements. At the issuance of this permit, Kentucky has not incorporated these provisions in its air quality regulations.